

Baylands Habitat Map 2020

Webinar Notes

Oct. 15, 2024, Noon-1:00 pm

- 73 registrants, 47 participants
- WRMP has recently released the Baylands Habitat Map 2020 (BHM 2020)!
- Funded by the EPA Water Quality Improvement Fund

Alex Braud, SFEI: Background about Creating the BHM 2020

Baylands Habitat Map 2020 goals:

- Goal is to detect landscape change over time
- Consistent and repeatable methods
- Enables tracking of restoration goals

Baylands Habitat Map description:

- Sub-meter resolution (60 cm)
- Built a computer algorithm to be able to consistently re-map
- Extent is possible tidal influence
- Aim to re-map every 3-5 years
- 18+ classifications of habitat, which fit into the following categories:
 - Subtidal
 - Intertidal (full tidal connection)
 - Intertidal (limited to no tidal connection)
 - Supratidal

Challenges to mapping Baylands habitats:

- How to define the Bay edge?
- Where do tidal channels end and begin, and how do we define the top of the bank?
- Where does the transition to upland habitat start?
- The data from NAIP are not all collected at low tide, some were at mid-time
- The decisions made for BHM 2020 will be automatically applied to future BHM mapping efforts for consistent re-mapping.

Image analysis techniques:

- Object-based analysis, that segments and classifies based on the images
- Used Trimble eCognition Developer software

Modeled functional extent of relative tidal elevation

- Used as a framework to classify the mapping
- Use digital elevation models as a foundation for habitat mapping
- Relative tidal elevation allows one algorithm to be consistently applied around the entire Bay

What the map can show:

- Can see the different categories of habitat across the Baylands in the lower Estuary
- Can see the channel networks, including showing hydrologic connectivity even when water is not present in the channel

How to access the map:

- Raw data is available in the SFEI data center and in EcoAtlas: <http://sfei.li/ecoatlas-bhm> and <https://www.sfei.org/data/baylands-habitat-map-2020-gis-data#sthash.UIHAEfMs.dpbs>

Planning to create a BHM 2024:

- Will collect LiDAR in summer 2025, will be a consistent dataset to enable better mapping
- Looking for cost-share partners on LiDAR collection for a higher density of points
- Future map will show more information about actively changing restored areas, and improved information about tidal ponds/ pannes

Relationship of BHM 2020 to WRMP:

- Feedback from WRMP Technical Advisory Committee and Geospatial Workgroup
- Foundational dataset for WRMP indicators and other metrics
- WRMP on-the-ground monitoring of vegetation and tide gauges will help improve future iterations of the habitat map

April Robinson, SFEI: How the Baylands Habitat Can Be Used and How it's Already Being Used

Main uses of BHM 2020:

- Understanding how Bay tidal marshes are doing
 - Tracking change over time
 - Track progress towards restoration goals
 - Track impacts of sea level rise
- Use as a planning tool
- Support field-based monitoring and research

Map can help answer the question of how much tidal marsh is there in the Bay?

- Bringing together BHM with Project Tracker data about restoration projects
- Includes information about what areas are becoming marsh post-restoration

Map can track progress within specific sites

- Can see what's happening post-restoration
 - For example, can see how channels are forming
 - Can track vegetated areas and open areas as sea level rises
 - Can track erosion on the edges of the marshes
- This can be useful for restoration project managers and regulators

Map can track progress across the Bay

- Can track marsh patch size, patch connectivity
- BHM can enable us to look at multiple metrics at multiple different scales

Map can help decision-making:

- Restoration Authority (RA) is using the BHM to see how the sites they're funding contribute to the overall marsh patches in the region
- Baylands Resilience Framework is using the BHM to inform adaptation and restoration, including marsh elevation to guide strategic placement of dredged sediment and identify the distance from the marsh to the location for shallow water placement of dredged sediment
- BCDC Regional Shoreline Adaptation Plan (RSAP) will incorporate the BHM.

Map can support planning and interpretation of monitoring and research:

- Help identify where to do California Rapid Assessment Method (CRAM) for wetland monitoring
- Useful for orienting and navigating in the field when doing field work

Comments and questions:

Q1: To what extent has the BHM been used to help identify sea level rise in different jurisdictions? Should cities and counties contact BCDC to understand the different sea level rise projections in their area?

- The LiDAR data can be really informative for that kind of assessment.
- Some WRMP metrics, like percent vegetated, could be an indicator of seeing the impacts of sea level rise over time.
- For assessing flood vulnerability with climate change, there's the sea level rise component and the upland flooding component. Understanding the elevations of the low-lying areas is critical.
- The BHM 2020 is built on a patchwork of existing data sets. New LiDAR will provide much high quality elevation data for everyone, and provide one consistent data set for the whole region. That's why we're looking for cost-share partners.

Q2: How timely are the updates to the mapping? With sea level rise and development pressures, will it show the changes fast enough?

- The WRMP regional monitoring collates all the information and puts it in context to enable us to make decisions about restoration, planning, and management.
- The BHM can classify managed open water, salt ponds, muted tidal areas. We're refining that classification to enable further analyses.

Q3: For higher quality data sets, could on the ground data collection help?

What citizen science / community monitoring opportunities are available for volunteers?

- Yes, the WRMP will be doing some ground-truthing of the BHM.
- The WRMP will be co-developing community-engaged monitoring programs with community-based organizations and Tribes starting in Jan 2025.

Q4: Probably a way into the future, and funding-dependent, but any plans to extend this amazing work into the upper estuary?

- The WRMP is working with the Delta Stewardship Council to explore this possibility, pending funding availability.